User's Manual

By

HYTROL CONVEYOR COMPANY, INC.
JONESBORO, ARKANSAS

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ATTENTION: Only qualified electrical personnel familiar with the installation and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

The user is responsible for conforming to all applicable local, national, and international codes. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

WARNING

NEVER... START CONVEYOR UNTIL PERSONNEL ARE CLEAR

NEVER... LUBRICATE OR REPAIR WHILE CONVEYOR IS RUNNING

NEVER... RUN THE CONVEYOR WITH GUARDS REMOVED

NEVER... PUT YOUR HANDS ON THE CONVEYOR OR IN THE CONVEYOR WHEN IT IS RUNNING.

NEVER... ALLOW ANY PART OF YOUR BODY TO COME IN CONTACT WITH THE CONVEYOR PULLEYS WHILE IT IS RUNNING.

IT IS THE EMPLOYERS RESPONSIBILITY TO IMPLEMENT THE ABOVE AND ALSO TO PROVIDE ADEQUATE PROTECTION FOR ANY PARTICULAR USE, OPERATION OR SERVICE.

DO NOT REMOVE THIS SIGN FROM THIS MACHINE

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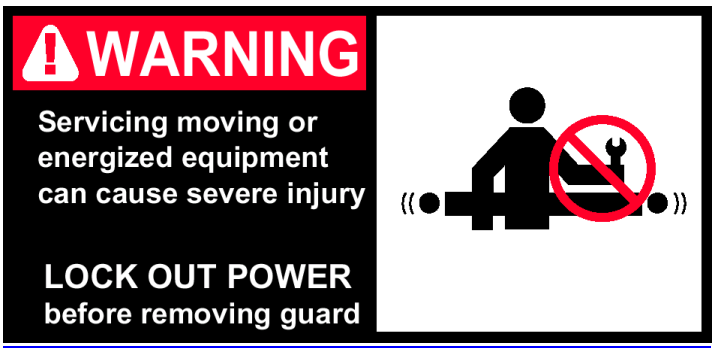

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Introduction

View the Table of Contents to find the appropriate section for more detailed information on each subject listed below.

Simple On-Site Calibration

ZipLogix provides the ability to quickly and easily customize the controls to a specific combiner and be up and running. After verifying the combiners and induction conveyors I/O connections completing the setup screens, the combiner is ready for operation. This effectively eliminates prolonged periods of time for custom programming and debugging.

Access Protection

Only authorized personnel who know a user password can access the configurable data settings.

Built in Diagnostics

Fault messages for each of the variable frequency drives included in the ZipLogix system, will be displayed on the Fault Screen as they Occur.

Control Interlocks

There will be a “Run Enable” signal from the system, which will tell ZipLogix to start combining and releasing product.

There is a “Zone Stop” signal that will be sent to the discharge zones of the conveyors that will be feeding the Induction Lanes to the Combiner. This is a voltage signal that will be sent to a Gen II “Yellow Label” EZLogic Modules, or a Gen III “Auxillary I/O” module. ZipLogix will send the Zone Stops whenever the flow of product needs to stop.

Combiner Speed

The Combiner’s speed can be easily changed from the HMI. As well as the Induction Conveyors Screen.

Features Of *ZipLogix*

ZipLogix is a control package developed by the Hytrol's control group located in Jonesboro, Arkansas.

ZipLogix is a standard package for 2 to1, 3 to 1, and 4 to 1 Combiners. *ZipLogix,* with its user-friendly touch screens, allows you to quickly and easily configure the controls to your combiner and be up and running in a short time after installation. The touch screens also provide ease of operation, and diagnostics for quick troubleshooting.

ZipLogix provides stand-alone complete control for an individual combiner making for flexible integration into any conveyor system. *ZipLogix* controls all the devices on the combiner and interlocks signals between the combiner and other involved devices.

ZipLogix combines product from all enabled lanes in a round robin fashion, if there is product present on lanes. It can be configured to require one or more lanes to have *Priority* over the others. The number of *priority* boxes is also configurable.

ZipLogix will set a *nominal* gap between the products as it is combining the lanes.

This manual will guide you through the installation and wiring of the controls. You will then be given an explanation of each screen and its function before being led through the steps required to configure the controls.

For safety to personnel and for proper operation of your conveyor, it is recommended that you read and follow the instructions provided in this manual.

The illustrations, screens, and layout examples shown in this manual are intended solely for purpose of example. All of the features and details discussed in this manual may or may not apply to your specific controls based on the configuration and custom requirements specified by the customer for this application, which may deviate from the standard package.

Support Services

Hytrol desires to give great customer and distributor support for our line of control products.

Coverage:

This support structure is being implemented for the following control products only: ProLogix, Plug-N-Go, GapLogix, and ZipLogix. This support number is not for conveyor, mechanical, EZLogic or any other issues not directly related to the ProLogix, Plug-N-Go, GapLogix, or ZipLogix control products.

ZipLogix is Hytrol's combiner control product that may be used for controlling any Hytrol model sorter in any configuration. Plug-N-Go is the latest cabling technology that Hytrol has engineered into a quick connect cabling system to connect all electrical devices on a combiner back to the ZipLogix control panel providing the best features of hardwiring and field bus networks. GapLogix is Hytrol's gap/pitch control product designed to set a specific gap or pitch on product to optimize throughput rates for feeding combiners, weigh scales, bar code scanners, RFID readers, labelers, etc. ZipLogix is Hytrol's combiner control product for zippering the release of product off of each lane while setting a nominal gap between each product allowing throughput rates to be achieved at slower conveyor speeds.

Site visits or after warranty support may require payment.

Warranty Period:

Technical support for these products extends from the date of shipment to one year from this date. Support for control issues that may arise during this time period can be received by calling the phone number listed below. After warranty support may require payment.

Controls Support Number:

After Hours

1 (870) 268-4260 Please use this number for control issues on the above designated products only. (Please have these items written down when you place call: Serial # on inside of control panel door, company name, phone number to call back, & description of issue)

During Normal Business Hours

2 (870) 935-9444

Controls Support Hours:

Phone support may be received 24 hours per day and 7 days per week.

- 8:00 am – 5:00 pm (Central time) - Immediate assistant may be possible during normal business hours.
- After hour's emergency – Response time may vary up to a maximum of 2 hours according to the degree of support required and the time required for the Controls Specialist to arrive at the support center.

Onsite Support:

The Controls Specialist will try to diagnose and remedy the issue over the phone, dialing into the panel's modem (if modem and analog phone line is present), and any other tools available for remote support without cost during the warranty period.

- If a jobsite visit is required because of a Hytrol issue during the warranty period, there will be no cost to the customer.
- If a jobsite visit is required because a modem was not ordered with the controls, an analog phone line was not connected to the modem prior to startup, or an issue caused by the customer, the customer will be required to pay all labor and travel expenses.
- If a jobsite visit is required because of issues caused by other parties, those parties must incur the labor and travel expenses.

Out of warranty remote support:

Remote support for the designated control products is free of charge during the warranty period. Site visits or after warranty support may require payment.

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Installation

1 Inspection and inventory of components should be conducted upon receiving packages. Check the number of items received against the parts checklist below. Examine condition of equipment to determine if any damage has occurred during shipment.

Electrical Code: All motor controls and wiring shall conform to the National Electrical Code (Article 670 or other applicable articles) as published by the National Fire Protection Association and as approved by the American Standards Institute, Inc.

1.1 Parts Checklist

1 each- Main Control Panel
1 each - Warning Device
2 per each Induction Lane - Photo Eye Kit
2 each – Combiner Jam PE Kit

1.2 Mounting The Hardware

1.2.1 CONTROL DEVICE MOUNTING CONSIDERATIONS

A) Control stations should be so arranged and located that the operation of the equipment is visible from them, and shall be clearly marked or labeled to indicate the function controlled.

B) A conveyor shall not be started until employees in the area are alerted by a signal or by a designated person that the conveyor is about to start. When a conveyor would cause injury when started and is automatically controlled or must be controlled from a remote location, an audible device shall be provided which can be clearly heard at all points along the conveyor where personnel may be present. The warning device shall be actuated by the controller device starting the conveyor and shall continue for a required period of time before the conveyor starts. A flashing light or similar visual warning may be used in conjunction with or in place of the audible device if more effective in particular circumstances. Where system function would be seriously hindered or adversely affected by the required time delay or where the

C) intent of the warning may be misinterpreted (i.e., a work area with many different conveyors and allied devices), clear, concise, and legible warning shall be provided. The warning shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. The warnings shall be provided along the conveyor at areas not guarded by position or location. If the supplied warning device is not loud enough to easily be heard the full length of the conveyor because of length and/or noise, then either a louder device or an additional device should be installed to properly warn personnel.

D) Remotely and automatically controlled conveyors, and conveyors where operator stations are not manned or are beyond voice and visual contact from drive areas, loading areas, transfer points, and other potentially hazardous locations on the conveyor path not guarded by location, position, or guards, shall be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices. Connection points are provided in the control panel to put these 'customer supplied' devices in series with the E-Stop safety circuit. See the schematics provided for the proper connection points.

All such emergency stop devices shall be easily identifiable in the immediate vicinity of such locations unless guarded by location, position, or guards. Where the design, function, and operation of such conveyor clearly are not hazardous to personnel, an emergency stop device is not required.
The emergency stop device shall act directly on the control of the conveyor concerned and shall not depend on the stopping of any other equipment. The emergency stop devices shall be installed so that they cannot be overridden from other locations.

E) Inactive and unused actuators, controllers, and wiring should be removed from control stations and panel boards, together with obsolete diagrams, indicators, control labels, and other material that serve to confuse the operator.

1.2.2 MOUNTING THE PANELS

A) The control panels have a NEMA 1 rating, which is a rating intended for indoor use primarily to provide a degree of protection against the contact with the enclosed equipment or locations where unusual service conditions do not exist.

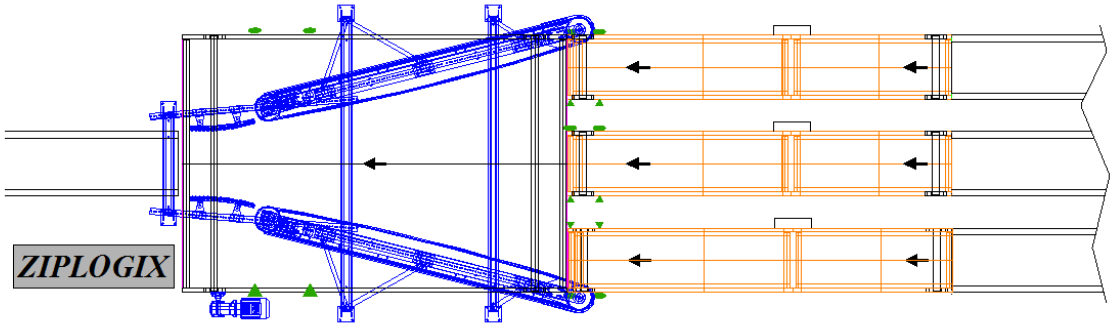


Figure 1-1

B) The main control panel should normally be mounted near the combiner area. The main control panel should always be within a distance of the "Homerun Cable" from the "I/O Block", and electrical devices on the conveyor should be within a distance of the supplied cables, from the "I/O Block". *(Figure 1-1)*

1.2.3 SAFETY DEVICES

A) All safety devices, including wiring of electrical safety devices, shall be arranged to operate in a "Fail-Safe" manner, that is, if power failure or failure of the device itself would occur, a hazardous condition must not result.

B) Emergency Stops and Restarts. Conveyor controls shall be so arranged that, in case of emergency stop, manual reset or starts at the location where the emergency stop was initiated, shall be required of the conveyor(s) and associated equipment to resume operation.

C) Before restarting a conveyor, which has been stopped because of an emergency, an inspection of the conveyor shall be made and the cause of the stoppage determined. The starting device shall be locked out before any attempt is made to remove the cause of

stoppage, unless operation is necessary to determine the cause or to safely remove the stoppage.

Refer to ANSI Z244.1-1982, American National Standard for Personnel Protection – Lockout/Tagout of Energy Sources – Minimum Safety Requirements and OSHA Standard Number 29 CFR 1910.147 "The Control of Hazardous Energy (Lockout/Tagout)."

1.3 Wiring Specifications

Power required to ZipLogix's control panel is 460 VAC three phase with a range of 400 – 500 VAC. Incoming power wires should be rated for the needed current requirement. Improper voltage / wiring may damage controls.

1.3.1 CONNECTION RECOMMENDATIONS

A) Connecting the E-Stop Circuit:

- If this combiner is part of a system:

  ZipLogix's emergency stop circuit must be put in series with the system's E-Stop circuit. You may do this by wiring terminals 3 and 4 in series with the other system E-Stop devices. Then connect terminals 2 and 5 to normally open contacts on the system's E-Stop relay. Refer to ZipLogix's hardwire schematic on drawing ED-10037-04 to view these connection points. This will allow any E-Stop device in the system to stop the combiner.

- If this combiner is not part of a system:

  If this combiner is stand-alone and will not be started and stopped by a central control system, connect the E-Stop circuit per the following instructions. Refer to ZipLogix's hardwire schematic. Jumper terminal 2 to terminal 3. This will supply the power for the E-Stop circuit. If any other safety devices are installed that must stop the combiner, wire them in series between terminals 4 and 5. If no other safety devices are to be connected, jumper terminal 4 to terminal 5.

1.3.2 COMMUNICATING WITH OTHERS

A) Conveyor Start Signal The combiner will normally be started by the central controls of the system, so that it can easily coordinate the sequence in which all the conveyors in the system start up. This "Run" signal is sent to ZipLogix via I/6 on the ZEN Programmable relay. Refer to Chapter 5: Communicating with ZipLogix for the details on how to use this signal.

B) Combiner is Ready Signal The "Combiner is Ready" signal is sent after the combiner is running, up to speed, and ready to be fed product. This signal is a contact closure where the system's voltage is supplied to terminal 12 and it is sent back on terminal 13 when the contact is closed. Refer to Chapter 5: Communicating with ZipLogix for the details on how to use this signal.

1.4 Device Specifications

1.4.1 DEVICE REQUIREMENTS

A) The **combiner "Jam" photo eyes** will be of the type and connected for 'dark operation' (signal "Off" until eye is blocked). The output signal will be a sourcing (PNP) output. The amp draw for each photo eye will not exceed 100 mA.

B) The **lanes "Detect" and "Exit" photo eyes** will be of the type and connected for 'dark operation' (input "Off" until eye is blocked). The output signal will be a sourcing (PNP) output. The amp draw for each photo eye will not exceed 100 mA.

C) The **warning device** connected to the warning output will not exceed ½ amp.

1.4.2 DEVICE MOUNTING LOCATIONS

A) The combiner “Jam” photo eyes do not have a specific mounting location. Type of product should be taken into consideration when deciding the location of the “Jam” photo eyes. The eyes must be able to see all the way across the combiner belt, and underneath the plows. A reflector should be mounted on the opposite side of the combiner for each photo eye. The recommended location for the “Jam” photo eyes, is illustrated if *Figure 1-2, Items 6 & 7*.

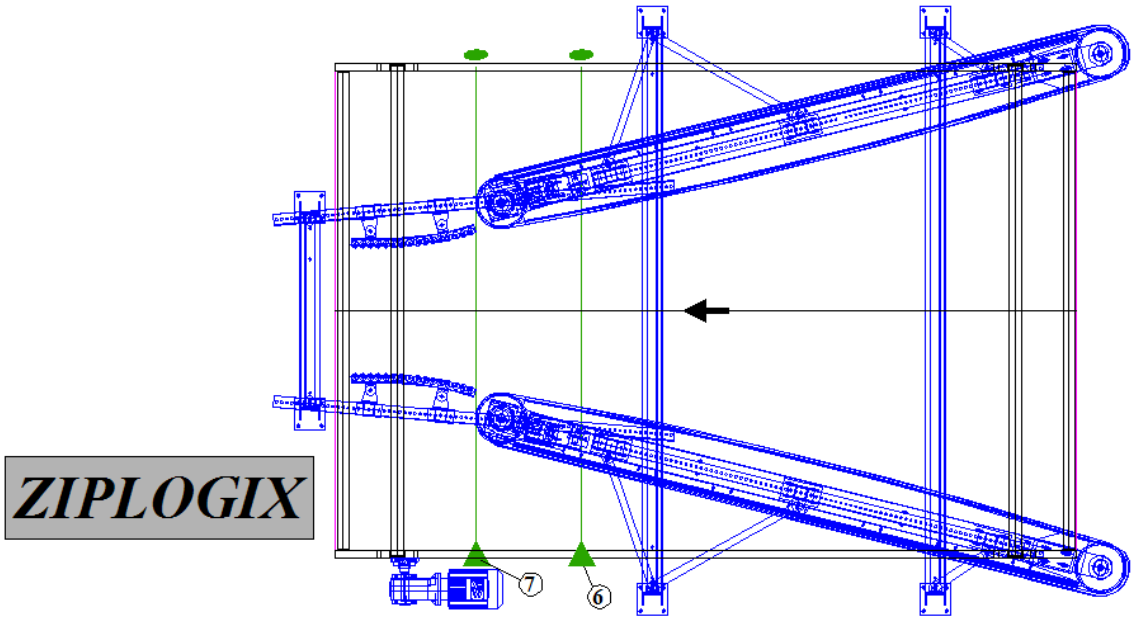


Figure 1-2

B) An *"Exit PE"* for each induction lane should be mounted at the *extreme* discharge end of each induction lane, looking 90 degrees across the lane at a reflector. *(See Figure 1-3, item 5)*

C) A *"Detect PE"* for each induction lane should be mounted, 11 inches upstream from the *"Exit PE"*, and looking 90 degrees across the lane at a reflector. *(See Figure 1-3, item 4)*

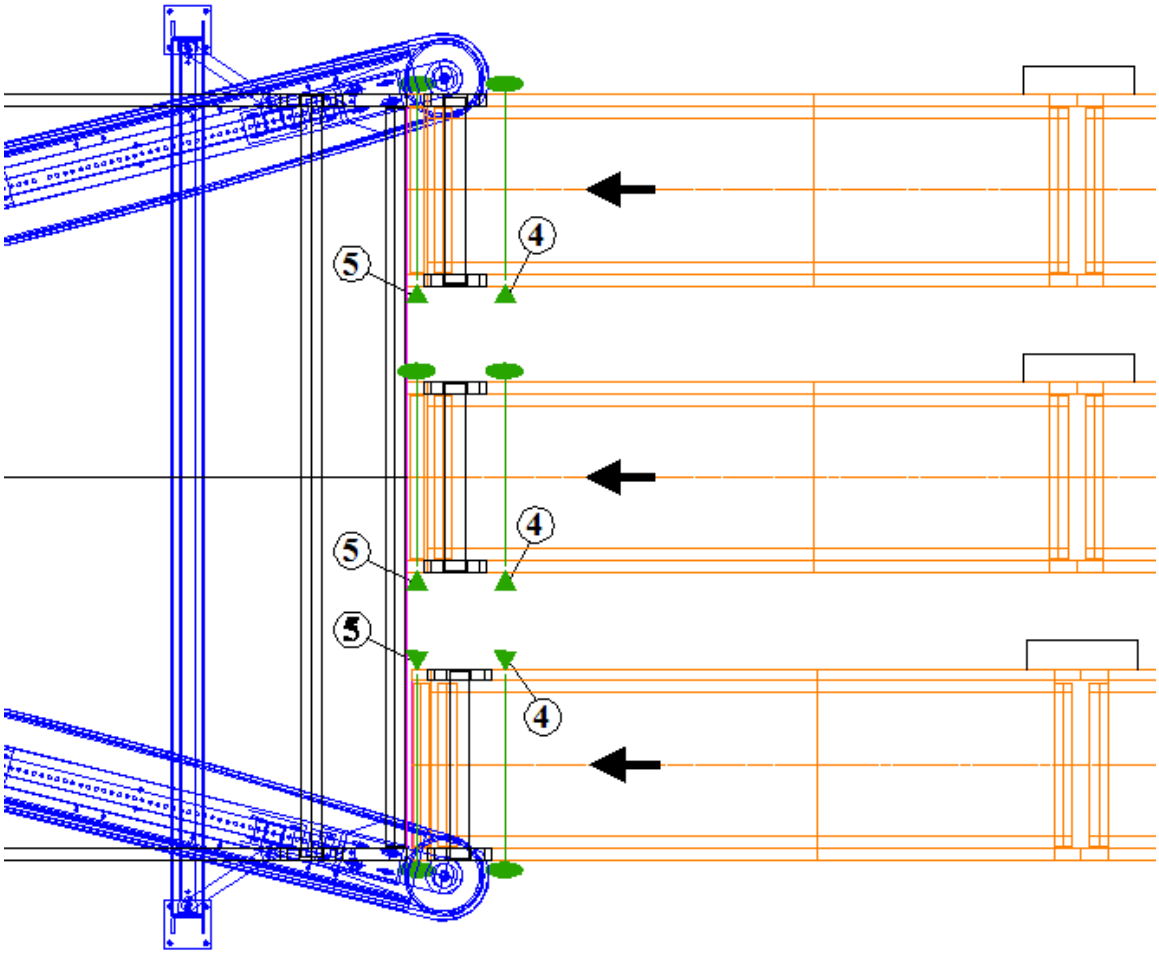


Figure 1-3

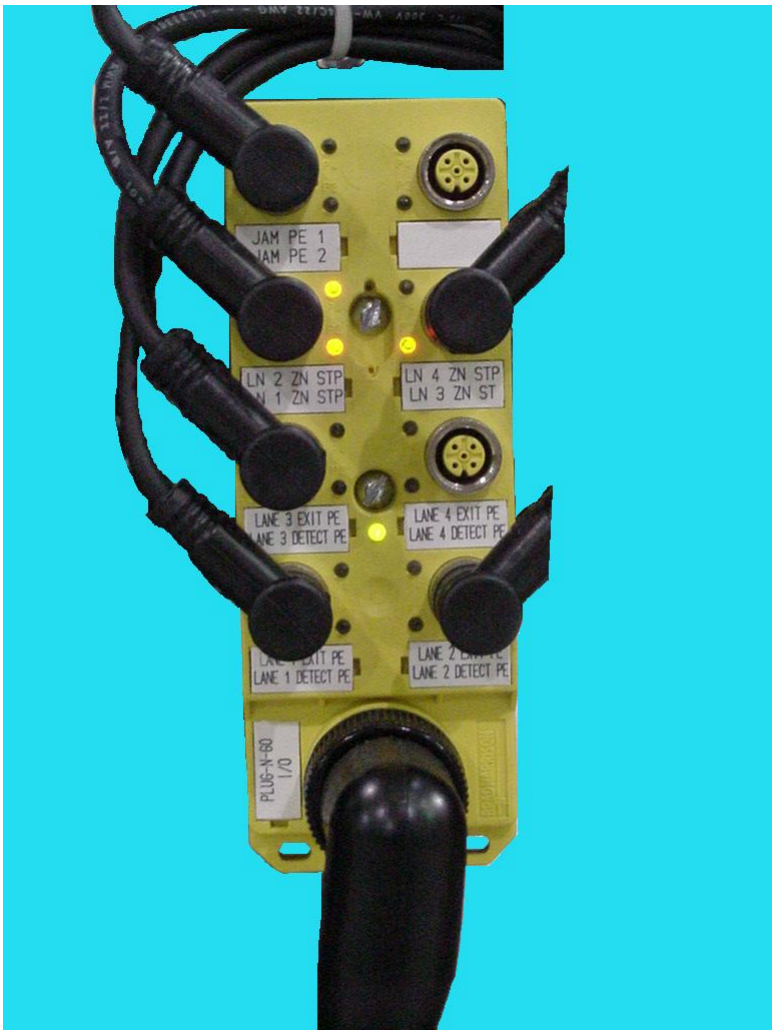


Figure 1-4

D) ZipLogix comes equipped with Hytrol's *"Plug-N-Go©"* cabling system. There will be one I/O block, *(Figure1-4)* to be mounted near the discharge end of the outside induction lane, on the same side of the combiner as the control panel. Each device on the combiner will connect to this I/O block. Also included, will be all cables necessary to connect all devices to the I/O block. There will be one main *"Homerun"* cable provide, to connect the I/O block to the control panel. This I/O block also has LED's, that will aid in troubleshooting.

1.5 Encoder Connection

A) Each gearmotor on the combiner system has an encoder located on the end of the motor. *(Figure 1-4).* An encoder cable will be provided to connect each encoder to it's corresponding VFD. The cable end with the connector should be connected to the X15 port on teach corresponding VFD. The cable end with the loose wires should be connected at the encoder. Make sure that each encoder cable is installed in the manner shown in *(Figure 1-5)* to insure proper grounding of the cable. The encoder cables should be ran from each VFD to each encoder in a manner that isolates it from any high voltage or motor cables.

Figure 1-4

Figure 1-5

B) The connection points for the encoder cable at the encoder end are listed in *(Figure 1-6)*

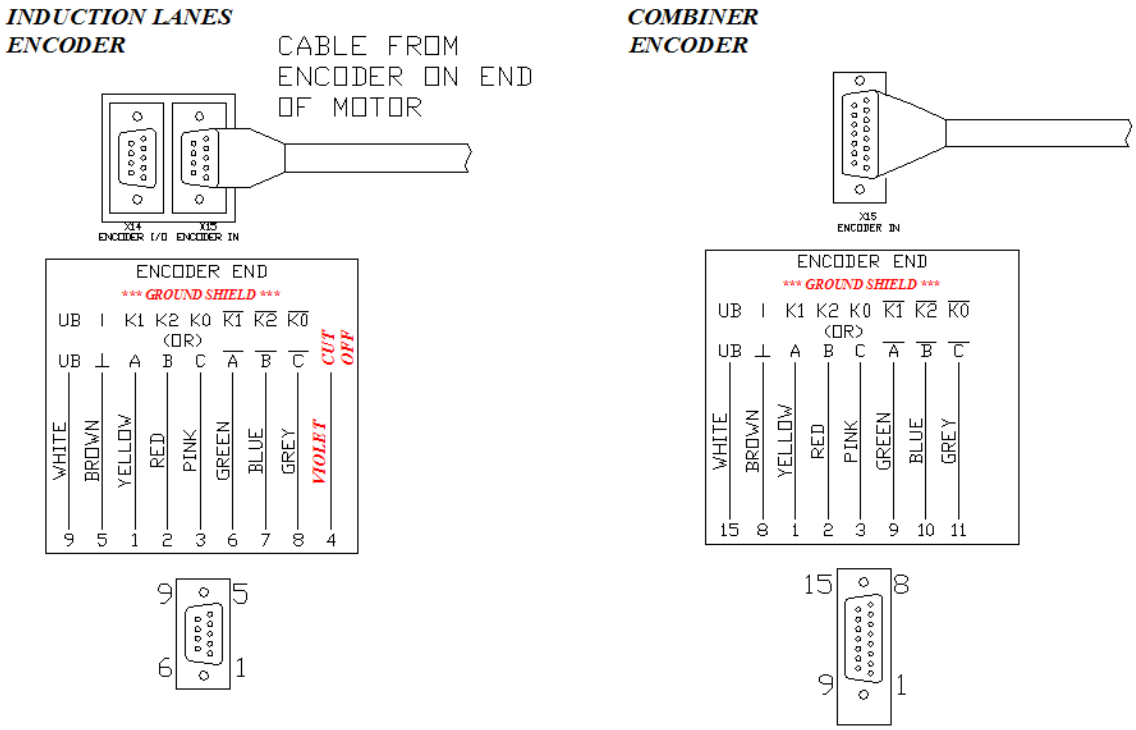


Figure 1-6

Checking Installation

After all mounting and wiring of devices has been completed, go through the following procedure to ensure that all wiring is properly connected.

2.1 Checks Before Applying Power

A) MAKE SURE POWER FEEDING ZIPLOGIX IS OFF! Check to make sure the AC supply power wires are properly connected. The "Ground" should be connected to the ground distribution lug labeled "PE".

B) Set meter for ohms and check from "PE" to each phase of the 460v power wires, to ensure that they are not grounded. Also check from "Ground" to terminal +24 to it is not grounded.

C) Make sure all wires are properly connected and covers are in place. Make sure all personnel are clear of all moving parts, wiring, and electrical devices.

D) **ATTENTION:** The user is responsible for conforming to all applicable local, national, and international codes with the field wiring. The user is also responsible for supplying the correct line voltage. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

2.2 Checks After Applying Power

A) Make sure that everyone in the area knows that you are going to apply power to the controls! Turn "On" the 460 VAC supply voltage to the control panel. Set meter for "VAC" and check from phase to phase, to ensure that supply power is 460 VAC.

B) Go to "I/O Menu" screen. On each screen, check the operation of each device to ensure that it is wired correctly and working properly. Check the operation of the emergency stop circuit by pushing and pulling the emergency stop pushbutton located beside the HMI. The E-Stop Button indicator light should illuminate when the E-Stop button is pushed, and the relay SR1 should de-energize. If the E-Stop circuit doesn't change states,

C) another E-Stop in the circuit may be tripped, the central control system is not powered up, or there is a wiring problem.

D) Check each Induction VFD to insure that it is not faulted. The HMI should display a message notifying the user of a fault. Each VFD also has an LED Indicator that reflects the state of the Drive. With the power on and the ZipLogix not running, this LED will be Amber. If the drive is faulted, this LED will be Red. *(FIGURE 2-1)*

Figure 2-1

Overview of *ZipLogix* Touch Screens

3 Before getting into the configuration of ZipLogix, you will be introduced to the operation of the touch screens. This chapter will explain the purpose, features, and operation of each screen.

3.1 Configuration Protection

A password will be required to change the setup parameters in ZipLogix. This is intended to keep unauthorized personnel from changing setpoints, and to prevent accidental changes.

The Screens may be viewed without the password enabled, but changes will not be allowed without entering the correct password. There is a message at the bottom of each screen with setpoints, to display the state of the password. It will read either “Password Enabled” or “Password Disabled”

3.2 Explanation of Screens

You must touch the desired button or number field on the screen to select it or to change the value. Minimal pressure needs to be applied when touching objects on the touch screens.

Touching a number field brings up a numeric keypad to allow you to change the value of the associated parameter, provided the password is enabled. Once you have pressed the correct number(s), press the “ENTER” key to accept this value. When you press “ENTER”, the box will have the new value.

To remove any numeric keypad from view, press the “ // “ push button at the bottom of the keypad. *(Figure 3-1)*

- **NUMERIC ENTRY KEYPAD**

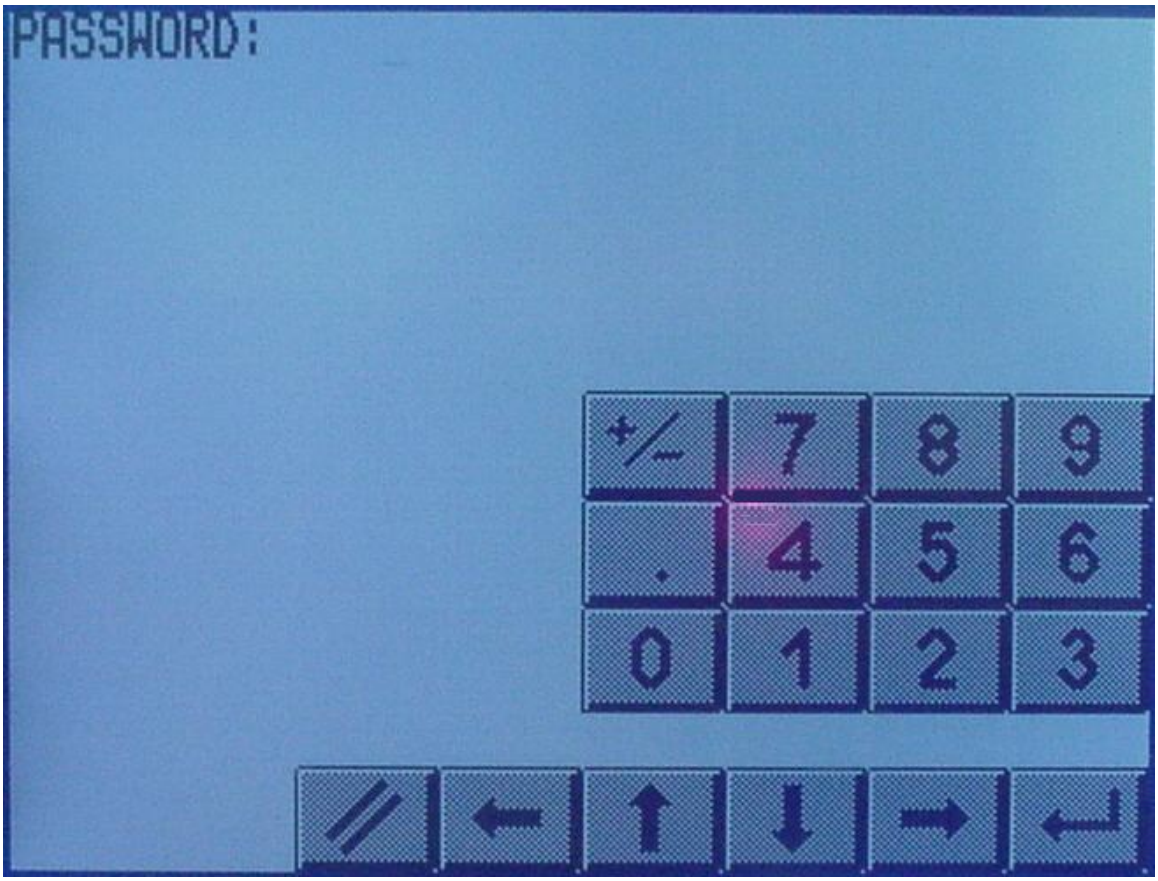
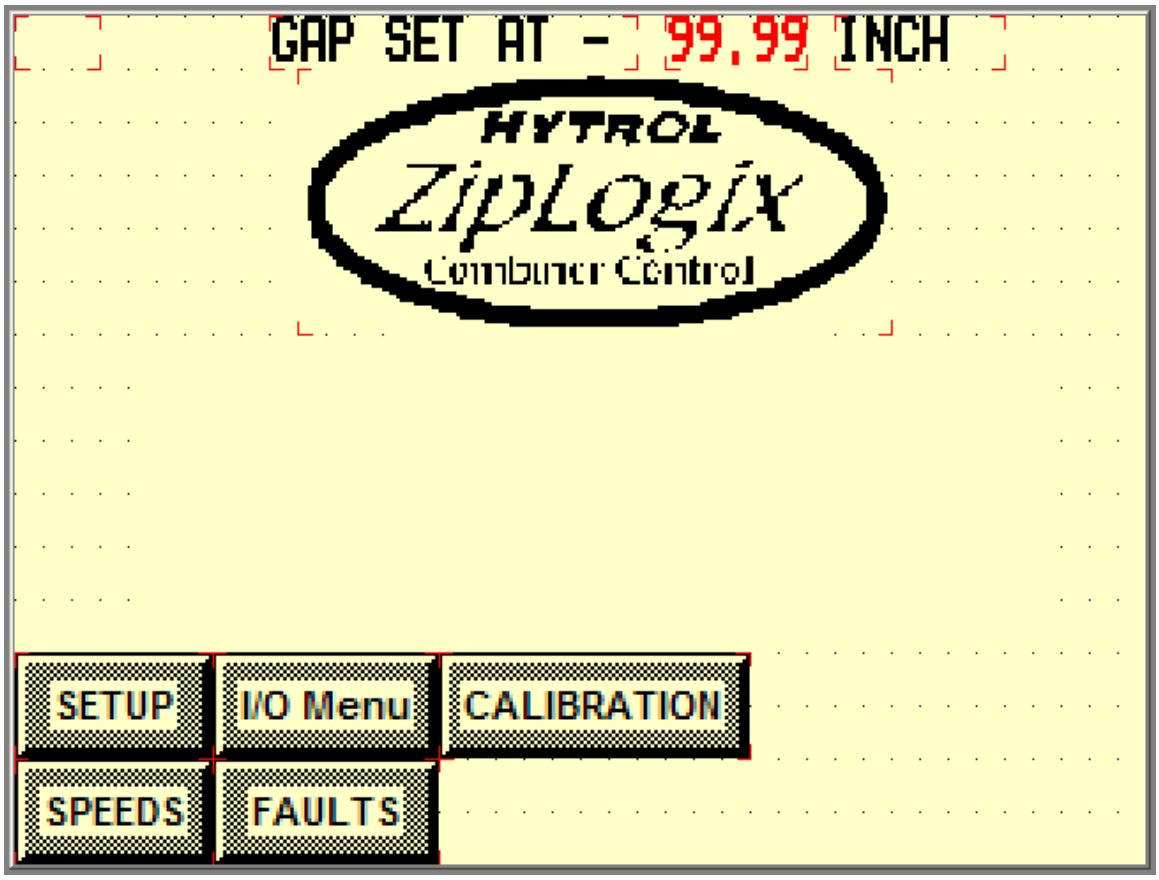


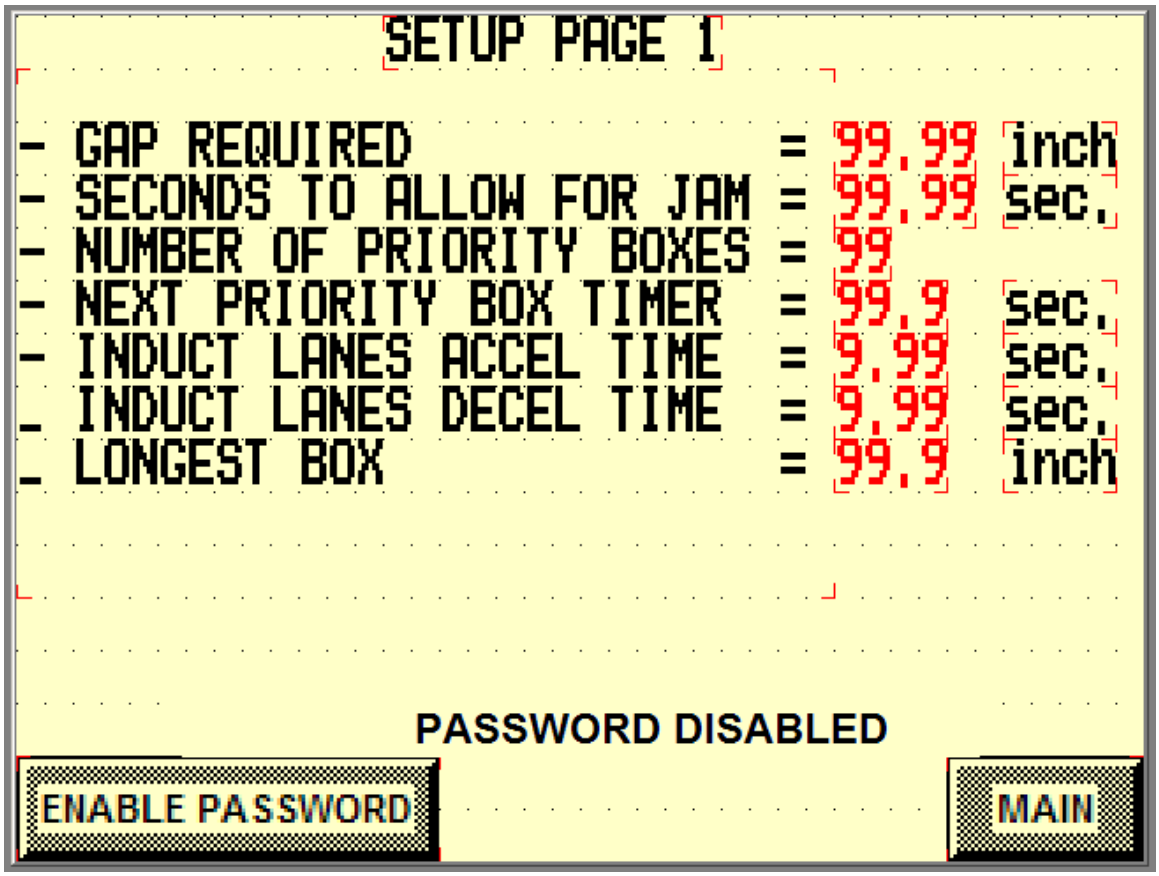
Figure 3-1

- **MAIN MENU**



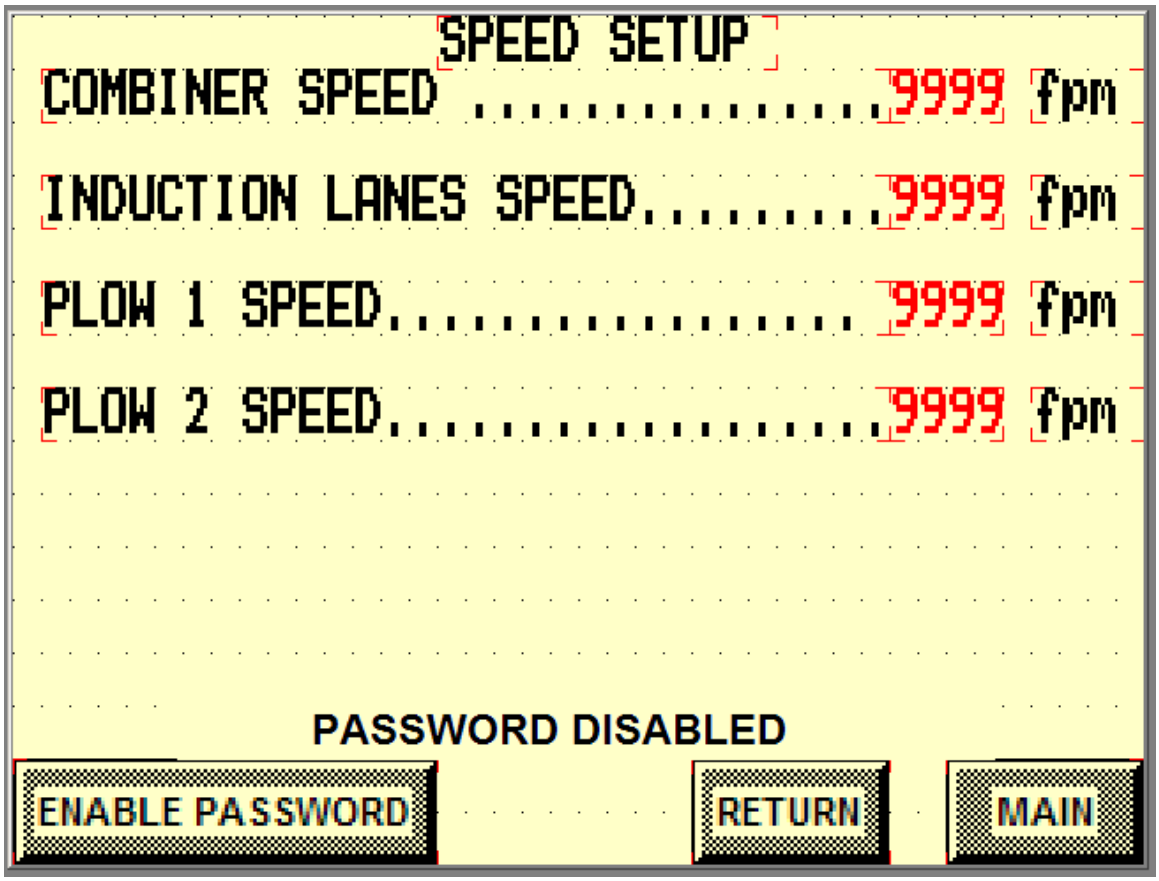
The Main Menu contains the selection buttons for the Setup, Speeds, I/O Menu, Calibration, and Fault Screens.

- **SETUP SCREEN**



The “Setup Screen’ , is where you will enter the parameters that will determine how the ZipLogix will operate. Before you can change any of these settings, you will have to enable the password. The “Gap Required”, is the amount of gap that require between boxes. The “Seconds To Allow For A Jam”, is a setting to delay the Jam fault when one of the “Jam Eyes” are blocked. The “Number of Priority Boxes”, is the setting for the number of boxes to release on a lane, when Priority is on for that lane. The “Next Priority Box Timer”, is how long you want to wait for a box to show up on a lane that has Priority on, before moving to the next lane. The “Induct Lanes Accel and Decel Time” is the setting for the ramp up and down on each of the induct lanes. The “Longest Box”, is the setting for the longest box that will be run on the system. This setting is used in conjunction with the Jam function. To change any of the settings, touch the corresponding numerical field, and the keypad screen will open. Enter a value and press the “Return Key”.

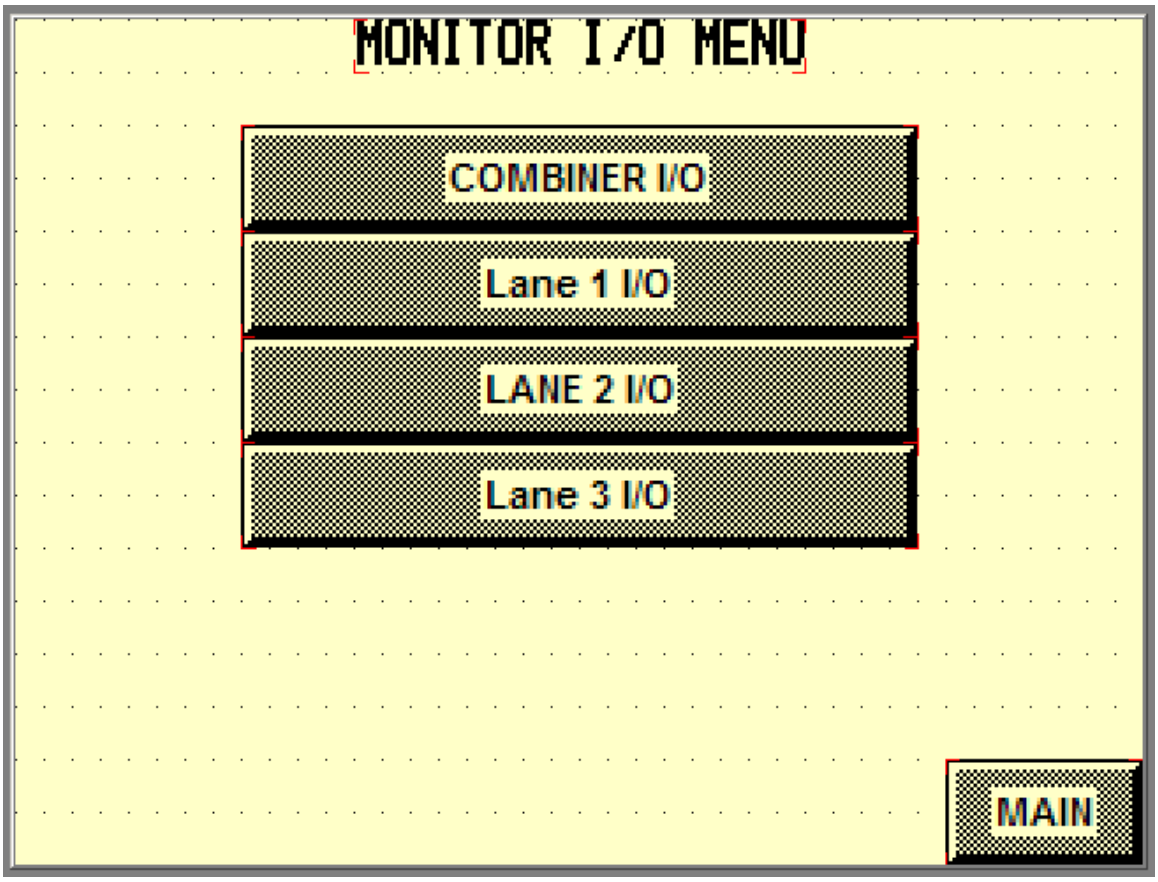
- **SPEED SETUP SCREEN**



On the "Speed Setup" screen you can enter the speeds that you want the units to run. The induction lanes need to run the same speed as the combiner. The plow speeds run at a vector speed of the combiner. The formula for setting the plow speeds is as follows….. $\frac{combinerspeed}{\cos ofplowangle}$

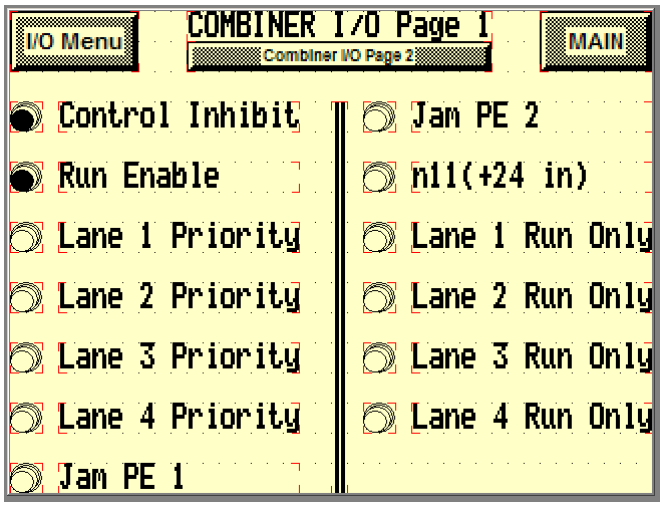
Combiner Speed divided by the cosine of the angle of the plows in relation to the combiner. The plow may need to be adjusted beyond this calculation, depending on the reaction of the specific product on the plows.

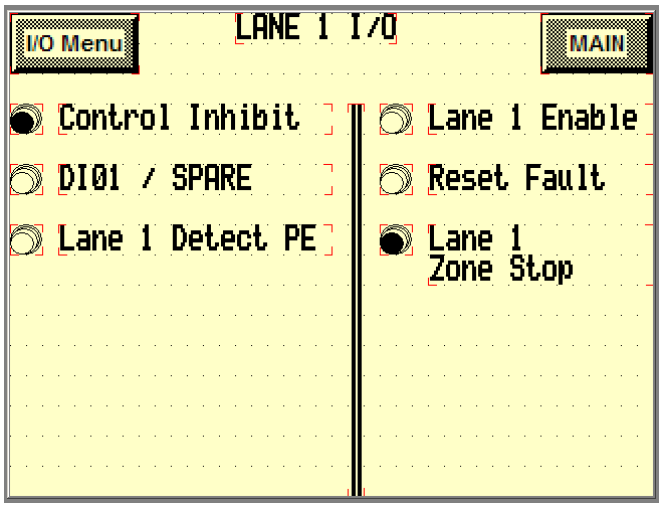
- **I/O MENU SCREEN**

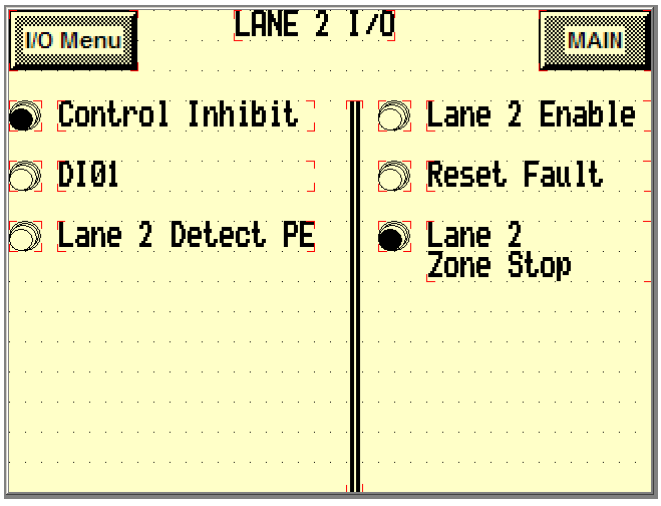


On the “Monitor I/O Menu” screen you can choose which I/O screen you wish to view.

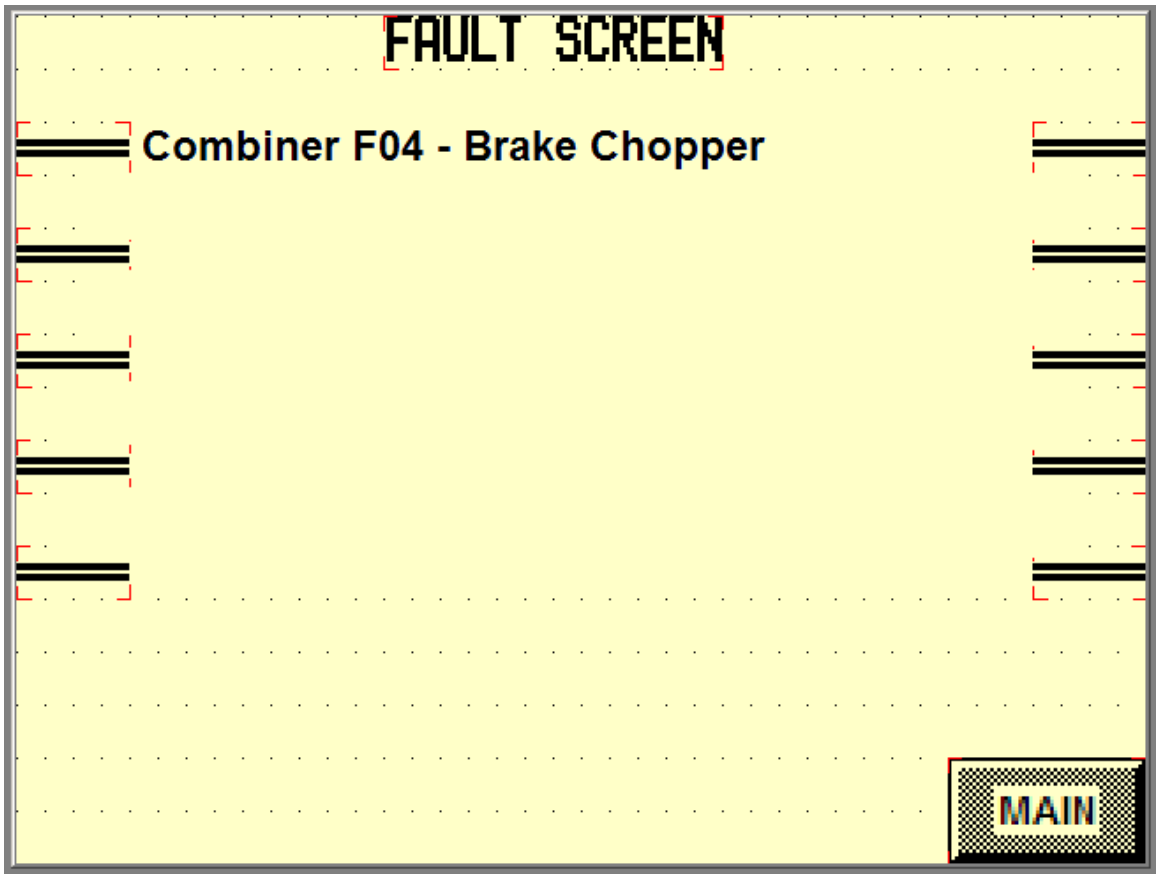
- I/O SCREENS


I/O Menu
COMBINER I/O Page 1
Combiner I/O Page 2
MAIN
Control Inhibit
Run Enable
Lane 1 Priority
Lane 2 Priority
Lane 3 Priority
Lane 4 Priority
Jam PE 1
Jam PE 2
n11(+24 in)
Lane 1 Run Only
Lane 2 Run Only
Lane 3 Run Only
Lane 4 Run Only


I/O Menu
LANE 1 I/O
MAIN
Control Inhibit
DI01 / SPARE
Lane 1 Detect PE
Lane 1 Enable
Reset Fault
Lane 1
Zone Stop


I/O Menu
LANE 2 I/O
MAIN
Control Inhibit
DI01
Lane 2 Detect PE
Lane 2 Enable
Reset Fault
Lane 2
Zone Stop

- **FAULT SCREEN**



The “Fault Screen’ will display any active VFD fault on the system. It will display which VFD is faulted and what the fault is.

Communicating With ZipLogix

4 ZipLogix allows for signals to easily interlock the Main system with ZipLogix.

4.1 Interlock Signals with Others

There are several signal interlocks provided to allow the system to coordinate the combiner with the other associated conveyors. The wiring connections for these signals are explained in Chapter 1: Installation.

- **Combiner Run Signal:** The “Combiner Run Enable Signal” can be sent to ZipLogix through a dry contact closure. This will be a 120VAC signal from ZipLogix through a system dry contact and back to ZipLogix. This allows the system to start and stop the combiner. When the signal is dropped the combiner will stop.

- **Combiner Ready Signal:** The “Combiner Ready Signal” will be sent to the system after the combiner is running and up to speed, to let the system that it is “Ok To Feed” the Combiner. This signal will be dropped when the combiner is stopped for any reason. This signal requires a system supplied voltage, through a dry contact in the ZipLogix, and back to the system.

- **Combiner No Faults Signal:** The “No Faults Detected” signal will be sent to the system whenever there is no active faults on the ZipLogix. When the ZipLogix faults, this signal will be dropped. This signal requires a system supplied voltage, through a dry contact in the ZipLogix, and back to the system.

- **Priority Signal:** ZipLogix can receive a “Priority” signal for each Induction lane. This will be a 120VAC signal from ZipLogix through a system dry contact and back to ZipLogix. This allows the system to turn the Priority signal on for a given lane. Once the priority is on, ZipLogix will release the set number of boxes from that lane before releasing from the other lanes, as long as there is product available.

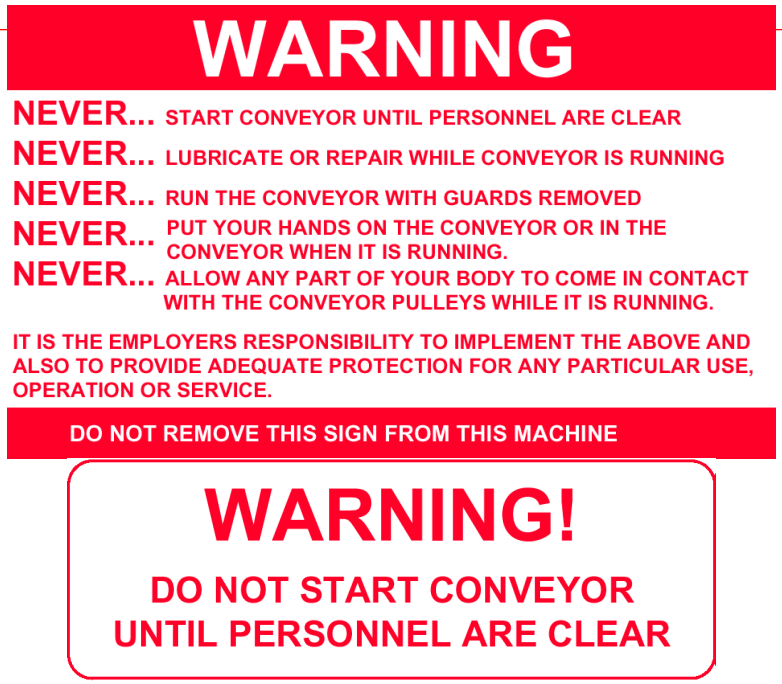
- **Run Only Signal:** ZipLogix can receive a “Run Only” signal for each Induction lane. This will be a 120VAC signal from ZipLogix through a system dry contact and back to ZipLogix. This allows the system to turn the Run Only signal on for a given lane. Once the Run Only is on, ZipLogix will release product from that lane only, and the other lanes will be disabled.

Operating Your Combiner

5 This chapter will explain how to use ZipLogix to operate the combiner. The touch screens were designed to be easy and self explanatory.

5.1 Starting the Combiner

CAUTION: Make sure the conveyor is completely assembled and ready to run. Make sure everyone is clear of all moving parts and that all tools and foreign objects have been removed from the conveyor. The controls and the VFDs should be powered up. Failure to observe these precautions could result in damage to, or destruction of, the equipment.


WARNING
NEVER... START CONVEYOR UNTIL PERSONNEL ARE CLEAR
NEVER... LUBRICATE OR REPAIR WHILE CONVEYOR IS RUNNING
NEVER... RUN THE CONVEYOR WITH GUARDS REMOVED
NEVER... PUT YOUR HANDS ON THE CONVEYOR OR IN THE CONVEYOR WHEN IT IS RUNNING.
NEVER... ALLOW ANY PART OF YOUR BODY TO COME IN CONTACT WITH THE CONVEYOR PULLEYS WHILE IT IS RUNNING.
IT IS THE EMPLOYERS RESPONSIBILITY TO IMPLEMENT THE ABOVE AND ALSO TO PROVIDE ADEQUATE PROTECTION FOR ANY PARTICULAR USE, OPERATION OR SERVICE.
DO NOT REMOVE THIS SIGN FROM THIS MACHINE

The combiner will normally be started by the central controls of the system, so that it can easily coordinate the sequence in which all the conveyors in the system start up. This “Run” signal is sent to ZipLogix input “I/6”. The combiner will stop when power on input “I/6” is dropped. If combiner is stopped by an error, the error must be reset by turning the combiner “On/Off” switch to “Off”, and then pressing the “Reset” buttton. The “Conveyor Ready” signal “Wire 13” can be monitored by the system to detect when the combiner has been stopped by something other than the system. The conveyors upstream from the combiner should not be started until the “Conveyor Ready” signal is seen.

When the combiner is started for the first time after it has been powered down, any boxes on the combiner will be run through. Each induction lane will start one at a time, to allow any box that was caught in transition from the induction unit to the Zipper belt, during shutdown, to be purged through. This is done to insure that a jam is not created.

If combiner does not start, check these items: the combiner "On/Off" switch is set to "Off", an E-Stop has been tripped, the ZipLogix is not receiving a Run signal from the system, an error condition exists (check on the "Fault Screen", correct, and reset errors).

5.2 Stopping the Combiner

The combiner may be stopped by pressing the "E-Stop" button, switching the "On/Off" to "Off", or dropping the "Run" signal from the system.

If the combiner is stopped by an E-Stop condition (E-Stop pushbutton pressed, safety cable pulled, etc…), then the E-Stop must be reset at the triggered device.

If any errors occur, then the problem must be corrected and the fault must be by cleared by turning the combiner "On/Off" switch to "Off", and then pressing the "Reset" buttton.

5.3 Changing Speeds

The speeds of the combiner and induction lanes, may be changed form the HMI. On the "Main Menu" press the button that is labeled "Speeds". This will take you to the "Speeds Setup" screen. You must first enable the *Password* by pressing the button labeled "Enable Password". A keypad will appear, enter the correct password and press the "Return Key". As you enter the password, the digits will appear in the upper left hand corner next to "**PASSWORD:**". If you enter the wrong password the digits will turn to asterisks (*) to let you know that the wrong password was entered. Once the password is enabled, a message will notify you that the password is enabled. Once you leave this screen, the password will no longer be enabled.

With the password enabled, you can touch the numeric field next to the speed that you want to change. A keypad will appear, enter the speed, and press the "return" key. The speeds for the Induction Lanes will all be changed at once. In normal operation, the Induction Lanes will run at a speed equal to the Zipper belt. Each of the plow speeds can be changed individually. This is because the plows may not be exactly at the same angle in relation to the Zipper belt, thus they will need to be operated at different speeds

Troubleshooting with *ZipLogix*

6 ZipLogix will immediately display an error message on the Main Menu whenever an error occurs. The Combiner will immediately shut down when one of these conditions occur. Ensure that the cause of the error condition has been remedied and all personnel are clear before attempting to restart the combiner. After repairing the condition that caused the error, the error will need to be cleared by turning the combiner "On/Off" switch to "Off", and then pressing the "Reset" buttton.

6.1 Error Messages

If the ZipLogix detects a fault, a message will appear on the Main Menu notifying whether the combiner or which lane has the fault. At this point you can navigate to the Fault Screen, to see what the fault is. All of the faults displayed here will be VFD faults.

6.1.1 Jam Detected

This error message will be displayed anytime one of the "Jam PE's" have been blocked for a predetermined amount of time. If this error occurs, the jammed boxes should be cleared on the combiner, and the fault cleared by turning the combiner "On/Off" switch to "Off", and then pressing the "Reset" buttton.

6.1.2 VFD Fault Troubleshooting Guide

A dot in the 'P' column means that the response is programmable (P83_ Fault response). The factory set fault response is listed in the 'Response' column.

Fault code	Name	Response	P	Possible cause	Action
00	No fault	-			
01	Over-current	Immediate switch-off		• Short circuit on output • Motor too large • Defective output stage	• Rectify the short circuit • Connect a smaller motor • Contact SEW Service for advice if the output stage is defective
03	Ground fault	Immediate switch-off		Ground fault • in the connecting harness • in the inverter • in the motor	• Eliminate ground fault • Contact SEW Service for advice
04	Brake chopper	Immediate switch-off		• Regenerative power excessive • Braking resistor circuit interrupted • Short circuit in braking resistor circuit • Excessively high braking resistance • Brake chopper defective • Possibly also ground fault	• Extend deceleration ramps • Check feeder to braking resistor • Check technical data of braking resistor • Fit a new MOVIDRIVE® if the brake chopper is defective • Check for ground fault
07	DC link overvoltage	Immediate switch-off		• DC link voltage too high • Possibly also ground fault	• Extend deceleration ramps • Check connecting harness for braking resistor • Check technical data of braking resistor • Check for ground fault
08	n-monitoring	Immediate switch-off		• Speed controller or current controller (in VFC operating mode without encoder) operating at setting limit due to mechanical overload or phase fault in the power system or motor. • Encoder not connected correctly or incorrect direction of rotation. • n_{max} is exceeded during torque control.	• Reduce load • Increase deceleration time setting (P501 or P503). • Check encoder connection, possibly swap over A/A and B/B in pairs • Check encoder voltage supply • Check current limitation • Extend ramps if appropriate • Check motor feeder and motor • Check supply system phases
09	Startup	Immediate switch-off		Inverter startup not yet performed for selected operating mode.	Perform startup for appropriate operating mode.
10	IPOS-ILLOP	Emergency stop		• Incorrect command detected during running of IPOS program. • Incorrect conditions during command execution. • Function not in inverter.	• Check program memory content and correct if necessary. • Load correct program into program memory. • Check program sequence (→ IPOS manual) • Use another function.
11	Overtemperature	Emergency stop		Thermal overload of inverter.	Reduce load and/or ensure adequate cooling.
13	Control signal source	Immediate switch-off		Control signal source not defined or defined incorrectly.	Set correct control signal source (P101).
14	Encoder	Immediate switch-off		• Encoder cable or shield not connected correctly • Short circuit/open circuit in encoder cable • Encoder defective	Check encoder cable and shield for correct connection, short circuit and open circuit.
15	24 V internal	Immediate switch-off		No internal 24 V supply voltage.	Check the mains connection. Contact SEW Service for advice if this reoccurs.
17-24	System fault	Immediate switch-off		Inverter electronics disrupted. Possibly due to effect of EMC.	Check ground connections and shields; improve them if necessary. Contact SEW Service for advice if this reoccurs.
25	EEPROM	Rapid stop		Fault when accessing EEPROM	Call up default setting, perform reset and set parameters again. Contact SEW Service for advice if this reoccurs.
26	External terminal	Emergency stop	•	Read in external fault signal via programmable input.	Eliminate specific cause of fault; reprogram terminal if appropriate.

Fault code	Name	Response	P	Possible cause	Action
27	Limit switches missing	Emergency stop		• Open circuit/both limit switches missing • Limit switches are swapped over in relation to direction of rotation of motor	• Check wiring of limit switches. • Swap over limit switch connections. • Reprogram terminals
28	Fieldbus timeout	Rapid stop	•	No master-slave communication took place within the configured response monitoring period.	• Check master communication routine • Extend fieldbus timeout time (P819) or switch off monitoring
29	Limit switch reached	Emergency stop		Limit switch was reached in IPOS operating mode.	• Check travel range. • Correct user program.
30	Emergency stop timeout	Immediate switch-off		• Drive overloaded • Emergency stop ramp too short.	• Check project planning • Extend emergency stop ramp
31	TF sensor	No response	•	• Motor too hot, TF sensor has tripped • TF sensor of motor not connected or not connected properly • MOVIDRIVE® connection and TF connection on motor interrupted	• Let motor cool down and reset fault • Check connections/link between MOVIDRIVE® and TF. • Set P835 to 'NO RESPONSE'.
32	IPOS index overrun	Emergency stop		Basic programming rules violated causing stack overflow in system.	Check IPOS user program and correct if necessary (→ IPOS manual).
33	Setpoint source	Immediate switch-off		Setpoint source not defined or defined incorrectly	Set correct setpoint source (P100).
35	Operating mode	Immediate switch-off		Operating mode not defined or defined incorrectly	Use P700 or P701 to set correct operating mode
37	System watch-dog	Immediate switch-off		Fault in system software procedure	Contact SEW Service for advice.
38	System software	Immediate switch-off		System fault	Contact SEW Service for advice.
39	Reference travel	Immediate switch-off		• Reference cam missing or does not switch • Limit switches not connected correctly • Reference travel type changed during reference travel	• Check reference cam • Check connection of limit switches • Check reference travel type setting and the parameters required for it
42	Lag error	Immediate switch-off	•	• Incremental encoder connected incorrectly • Accelerating ramps too short • P-component of positioning controller too small • Speed controller parameters set incorrectly • Value of lag error tolerance too small	• Check rotary encoder connection • Extend ramps • Set P-component to higher value • Set speed controller parameters again • Increase lag error tolerance • Check encoder, motor and mains phase wiring • Check mechanical components can move freely, possibly blocked up
43	RS-485 timeout	Rapid stop	•	Communication between inverter and PC interrupted	Check connection between inverter and PC. Contact SEW Service for advice if necessary.
44	Unit utilization	Immediate switch-off		Unit utilization (IxT value) exceeds 125 %	• Reduce power output • Extend ramps • Use a larger inverter if the specified points are not possible.
45	Initialization	Immediate switch-off		• No parameters set for EEPROM in power section or parameters set incorrectly. • Option pcb not in contact with backplane bus.	• Restore factory settings. Call SEW Service for advice if the fault still cannot be reset. • Insert the option pcb correctly.
47	System bus timeout	Rapid stop	•	Fault during communication via system bus.	Check system bus connection.
77	IPOS control word	No response		**Only in IPOS operating mode:** • Attempt was made to set an invalid automatic mode (via external control). • P916 = BUSRAMP set.	• Check serial connection to external control. • Check write values of external control. • Set P916 correctly.
78	IPOS SW limit switches	No response		**Only in IPOS operating mode:** Programmed target position is outside travel range delimited by software limit switches.	• Check user program • Check position of software limit switches
81	Start condition	Immediate switch-off		**Only in 'VFC hoist' operating mode:** Current during premagnetization phase could not be injected into motor at a high enough level: • Motor rated power too small in relation to inverter rated power. • Motor cable cross section too small.	• Check startup data and repeat startup procedure if necessary. • Check connection between inverter and motor. • Check cross section of motor cable and increase if necessary.

Fault code	Name	Response	P	Possible cause	Action
82	Output open	Immediate switch-off		**Only in 'VFC hoist' operating mode:** • Two or all output phases interrupted. • Motor rated power too small in relation to inverter rated power.	• Check connection between inverter and motor. • Check startup data and repeat startup procedure if necessary.
84	Motor protection	Emergency stop	•	Motor utilization too high.	• Reduce load. • Extend ramps. • Observe longer pause times.
85	Copy	Immediate switch-off		Fault when copying parameters.	Check connection between inverter and PC.
87	Technology function	Immediate switch-off		Attempt made to load the parameter set for a technology version unit with the technology function activated into a standard version unit.	Activate the factory settings (P802 = YES) and perform a reset.
88	Flying start	Immediate switch-off		**Only in 'VFC n-CTRL' operating mode:** Actual speed > 5000 rpm when inverter enabled.	Enable only at actual speed ≤ 5000 rpm.
94	EEPROM checksum	Immediate switch-off		Inverter electronics disrupted, possibly due to effect of EMC or a defect.	Send the unit in for repair.
99	IPOS ramp calculation fault	Immediate switch-off		**Only in IPOS operating mode:** Attempt made to alter ramp times and traveling velocities when the inverter is enabled, with a sine or squared positioning ramp.	Rewrite the IPOS program so that ramp times and traveling velocities can only be altered when the inverter is inhibited.

6.2 Using the Input and Output Screens

The input and output screens can be useful in troubleshooting problems. The state of the device can be monitored at any time in any mode. This is very useful at initial startup to check for correct wiring and proper operation. One person can actuate each device while another watches the state displayed on the screen.

You can navigate to the I/O screens by pressing the "I/O Menu" button on the Main Menu, and then pressing the button for the screen that you wish to view.

6.3 Troubleshooting Tips

If one of the Induction Lanes is running all the time, and product is not releasing from the other lanes, check the following……..

- Make sure that the lane that is running is not set to "Run Only"
- Check the "Exit PE", to insure that it is aligned with the reflector.

If one of the "Induction Lanes" is stopped, with present, check the following……..

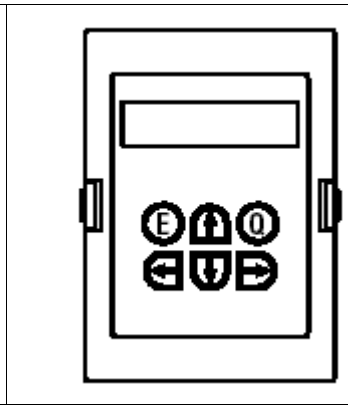
- Make sure that the "Detect PE" for that lane is aligned with the reflector.

7 Using the MoviDrive® Keypad

The Movidrive keypad can be used for multiple functions. You can use it for troubleshooting the VFD, saving, and loading the program and parameters. This section will explain how to use the keypad to perform these functions.

7.1 Basic functions of the keys

This document is a step-by-step example for saving and loading parameter files and programs with the DBG Keypad for the MOVIDRIVE® and MOVIDRIVE® *compact*.

DBG Keypad for MOVIDRIVE® and MOVIDRIVE® *compact*	
	
General function of the keys.	
	Next menu command or increase value in edit mode.
	Previous menu command or decrease value in edit mode.
	One menu level down or activate edit mode for the menu command.
	One menu level up or deactivate edit mode for the menu command.
	Cancel and return to main display.
	Pressing this key in the event of a fault gives direct access to Parameter 840 [Manual Reset].

7.2 Changing the language

Should the keypad display come up in a language other in English, do the following (this example is in German with the default SHORT MENU on).		
Press Key	Display	Description/Comments
	REGLERSPERRE STROM: 0 A	Press the Q key to return to the main display.
	840/ NEIN MANUELLER RESTE	Press the down arrow key.
	835/ KEINEREAKT REAKT. TF-MELDUNG	Press the down arrow key.
	820/ EIN 4-Q-BETRIEB1	Press the down arrow key.
	803/ AUS PARAMETWESPERRE	Press the down arrow key.
	802/ NEIN WERSEINSELLUNG	Press the down arrow key.
	801/ DEUTSCH SPRACHE	Press the down arrow key.
	801/ DEUTSCH SPRACHE	Press the right arrow key. This will put you in “EDIT” mode.
	801/ ENGLISH LANQUAGE	Press the up arrow key; the display will change to ENGLISH.
	CONTR. INHIBT CURR.: 0 A	Press the Q key to return to the main display.

7.3 Accessing full parameter set

To access the full parameter set of the drive the SHORT MENU must be set to OFF		
Press Key	Display	Description/Comments
	CONTR. INHIBT CURR.: 0 A	Press the Q key to return to the main display.
	840/ 0FF MANUAL RESET	Press the down arrow key.
	835/ NO RESPONSE RESP. TF-SIGNAL	Press the down arrow key.
	820/ ON 4-QUADR-OPER.1	Press the down arrow key.
	803/ OFF PARAMETER LOCK	Press the down arrow key.
	802/ NO FACTORY SETTING	Press the down arrow key.
	801/ ENGLISH LANGUAGE	Press the down arrow key.
	800/ ON SHORT MENU	Press the down arrow key.
	800/ ON SHORT MENU	Press the right arrow key. This will put you in “EDIT” mode.
	800/ OFF SHORT MENU	Press the up arrow key to turn the SHORT MENU off.
	CONTR. INHIBT CURR.: 0 A	Press the Q key to return to the main display.

7.4 Saving program & parameters from VFD to Keypad

Following is the procedure to save the inverter program from the drive to the DBG Keypad. This can be done while the drive is running:		
Press Key	Display	Description/Comments
	CONTR. INHIBT CURR.: 0 A	Press the Q key to return to the main display.
	9.. IPOS PARAMETERS	Press the down arrow key.
	8.. UNIT FUNCTIONS	Press the down arrow key.
	80. SETUP	Press the right arrow key.
	800 OFF SHORT MENU	Press the right arrow key.
	807 NO COPY MDX--> DBG	Press the down arrow key.
	807 NO COPY MDX--> DBG	Press the right arrow key. This will put you in “EDIT” mode.
	807 YES COPY MDX--> DBG	Press the up arrow key, the display will change from “NO” to “YES”.
-- WAIT--	COPYING DATA	Display while data is copying.
—	807 NO COPY MDX--> DBG	When copying is complete display will return to “NO”.
	CONTR. INHIBT CURR.: 0 A	Press the Q key to return to the main display (display example if the drive is not running).
	SPEED: 1500 rpm CURR.: 1.68 A	Press the Q key to return to the main display (display example if the drive is running).
The parameter file and any inverter program are now saved on the DBG Keypad.		

7.5 Saving program & parameters from Keypad to VFD

Following is the procedure to copy the program from the DBG Keypad to the inverter. NOTE: input DI00 (terminal X13:1 on the MOVIDRIVE® or terminal X10:9 on the MOVIDRIVE® *compact* must be low (24VDC must be removed while copying).		
Key	Display	Description
	CONTR. INHIBT CURR.: 0 A	Returns to main display (drive not running)
	9.. IPOS PARAMETERS	Press the down arrow key.
	8.. UNIT FUNCTIONS	Press the down arrow key.
	80. SETUP	Press the right arrow key.
	800 OFF SHORT MENU	Press the right arrow key.
	807 NO COPY MDX--> DBG	Press the down arrow key.
	806 NO COPY DBG--> MDX	Press the down arrow key.
	806 NO COPY DBG--> MDX	Press the right arrow key. This will put you in “EDIT” mode.
	806 YES COPY DBG--> MDX	Press the up arrow key, the display will change from “NO” to “YES”.
-- WAIT --	COPYING DATA	Display while data is copying.
—	806 NO COPY DBG--> MDX	When copying is complete display will return to “NO”.
	CONTR. INHIBT CURR.: 0 A	Press the Q key to return to the main display.
The parameter file and any inverter program saved on the DBG Keypad are now loaded on the inverter.		

7.6 Manually Running MoviDrive From Keypad

The Movidrive can be ran manually regardless of the wiring or parameter settings by using the following steps.
* If DI00 (Control Inhibit) is not turned on (24VDC applied), then it must be jumpered or otherwise energized before continuing.

1. Go to parameter 880 (Manual Run)
    a. Press the down arrow twice.
    b. Press the right arrow once to 8_ _.
    c. Press the down arrow once to 88_.
    d. Press the right arrow once to 880 (Manual Operation).
    e. Press the right arrow once again to enter the parameter.
2. Press the up arrow to start manual operation.
3. Select the direction of rotation with the left or right arrows (left=CW,right=CCW)

* Note: Pressing "Q" at any time will stop the motor.

4. Use the up and down arrows to increase and decrease the speed. Press Q to stop the motor.

To exit Manual Operation:

After pressing Q to stop the motor, press E once then Q once. This will take you back to the main screen.

7.7 Manually Resetting Error

If an error occurs on any VFD the status light on the VFD will be red instead of green or amber. It this occurs, the VFD has faulted. Note the error displayed and try cycling power to reset the error. If the error is still present after powering up, the cause of the error must be corrected before it can be cleared. Look up the error code in the instruction manual to determine the cause of the error. Correct the cause of the error.
You may directly view the fault code on the VFD using these steps. Unplug the communication module on the front of the VFD and put in the DBG keypad provided. Write down the error code displayed on the DBG keypad for future reference. Press the "E" push button will take you to the "Manual Reset" parameter (840). Press the up arrow key to reset the error.

Notes

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